

## Zener Diodes



### FEATURES

- High reliability
- Voltage range 10 V to 270 V
- Fits onto 5 mm SMD footpads
- Wave and reflow solderable
- AEC-Q101 qualified
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC


**RoHS**  
COMPLIANT

### APPLICATIONS

- Voltage stabilization

### PRIMARY CHARACTERISTICS

| PARAMETER                    | VALUE         | UNIT |
|------------------------------|---------------|------|
| V <sub>Z</sub> range nom.    | 10 to 270     | V    |
| Test current I <sub>ZT</sub> | 2 to 50       | mA   |
| V <sub>Z</sub> specification | Pulse current |      |
| Int. construction            | Single        |      |

### ORDERING INFORMATION

| DEVICE NAME   | ORDERING CODE     | TAPED UNITS PER REEL | MINIMUM ORDER QUANTITY |
|---------------|-------------------|----------------------|------------------------|
| BZG03C-series | BZG03C-series-TR  | 1500 (7" reel)       |                        |
| BZG03C-series | BZG03C-series-TR3 | 6000 (13" reel)      | 6000/box               |

### PACKAGE

| PACKAGE NAME | WEIGHT | MOLDING COMPOUND<br>FLAMMABILITY RATING | MOISTURE SENSITIVITY<br>LEVEL        | SOLDERING<br>CONDITIONS  |
|--------------|--------|-----------------------------------------|--------------------------------------|--------------------------|
| DO-214AC     | 77 mg  | UL 94 V-0                               | MSL level 1<br>(according J-STD-020) | 260 °C/10 s at terminals |

### ABSOLUTE MAXIMUM RATINGS (T<sub>amb</sub> = 25 °C, unless otherwise specified)

| PARAMETER                                   | TEST CONDITION                                                          | SYMBOL            | VALUE         | UNIT |
|---------------------------------------------|-------------------------------------------------------------------------|-------------------|---------------|------|
| Power dissipation                           | R <sub>thJA</sub> < 25 K/W, T <sub>amb</sub> = 100 °C                   | P <sub>tot</sub>  | 3000          | mW   |
|                                             | R <sub>thJA</sub> < 100 K/W, T <sub>amb</sub> = 50 °C                   | P <sub>tot</sub>  | 1250          | mW   |
| Non repetitive peak surge power dissipation | t <sub>p</sub> = 100 μs sq.pulse, T <sub>j</sub> = 25 °C prior to surge | P <sub>ZSM</sub>  | 600           | W    |
| Junction to lead                            |                                                                         | R <sub>thJL</sub> | 25            | K/W  |
| Junction to ambient air                     | Mounted on epoxy-glass hard tissue, fig. 1b                             | R <sub>thJA</sub> | 150           | K/W  |
|                                             | Mounted on epoxy-glass hard tissue, fig. 1b                             | R <sub>thJA</sub> | 125           | K/W  |
|                                             | Mounted on Al-oxid-ceramic (Al <sub>2</sub> O <sub>3</sub> ), fig. 1b   | R <sub>thJA</sub> | 100           | K/W  |
| Junction temperature                        |                                                                         | T <sub>j</sub>    | 150           | °C   |
| Storage temperature range                   |                                                                         | T <sub>stg</sub>  | - 65 to + 150 | °C   |
| Forward voltage (max.)                      | I <sub>F</sub> = 0.5 A                                                  | V <sub>F</sub>    | 1.2           | V    |

**ELECTRICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)

| PART NUMBER | ZENER VOLTAGE RANGE |      |      | TEST CURRENT | REVERSE LEAKAGE CURRENT |     | DYNAMIC RESISTANCE |      | TEMPERATURE COEFFICIENT OF ZENER VOLTAGE |      |
|-------------|---------------------|------|------|--------------|-------------------------|-----|--------------------|------|------------------------------------------|------|
|             | $V_Z$ at $I_{ZT1}$  |      |      | $I_{ZT1}$    | $I_R$ at $V_R$          |     | $Z_Z$ at $I_{ZT1}$ |      | $TK_{VZ}$ at $I_{ZT1}$                   |      |
|             | V                   |      |      | mA           | $\mu\text{A}$           | V   | $\Omega$           |      | % / K                                    |      |
|             | MIN.                | NOM. | MAX. |              | MAX.                    |     | TYP.               | MAX. | MIN.                                     | MAX. |
| BZG03C10    | 9.4                 | 10   | 10.6 | 50           | 10                      | 7.5 | 2                  | 4    | 0.05                                     | 0.09 |
| BZG03C11    | 10.4                | 11   | 11.6 | 50           | 4                       | 8.2 | 4                  | 7    | 0.05                                     | 0.1  |
| BZG03C12    | 11.4                | 12   | 12.7 | 50           | 3                       | 9.1 | 4                  | 7    | 0.05                                     | 0.1  |
| BZG03C13    | 12.4                | 13   | 14.1 | 50           | 2                       | 10  | 5                  | 10   | 0.05                                     | 0.1  |
| BZG03C15    | 13.8                | 15   | 15.6 | 50           | 1                       | 11  | 5                  | 10   | 0.05                                     | 0.1  |
| BZG03C16    | 15.3                | 16   | 17.1 | 25           | 1                       | 12  | 6                  | 15   | 0.06                                     | 0.11 |
| BZG03C18    | 16.8                | 18   | 19.1 | 25           | 1                       | 13  | 6                  | 15   | 0.06                                     | 0.11 |
| BZG03C20    | 18.8                | 20   | 21.2 | 25           | 1                       | 15  | 6                  | 15   | 0.06                                     | 0.11 |
| BZG03C22    | 20.8                | 22   | 23.3 | 25           | 1                       | 16  | 6                  | 15   | 0.06                                     | 0.11 |
| BZG03C24    | 22.8                | 24   | 25.6 | 25           | 1                       | 18  | 7                  | 15   | 0.06                                     | 0.11 |
| BZG03C27    | 25.1                | 27   | 28.9 | 25           | 1                       | 20  | 7                  | 15   | 0.06                                     | 0.11 |
| BZG03C30    | 28                  | 30   | 32   | 25           | 1                       | 22  | 8                  | 15   | 0.06                                     | 0.11 |
| BZG03C33    | 31                  | 33   | 35   | 25           | 1                       | 24  | 8                  | 15   | 0.06                                     | 0.11 |
| BZG03C36    | 34                  | 36   | 38   | 10           | 1                       | 27  | 21                 | 40   | 0.06                                     | 0.11 |
| BZG03C39    | 37                  | 39   | 41   | 10           | 1                       | 30  | 21                 | 40   | 0.06                                     | 0.11 |
| BZG03C43    | 40                  | 43   | 46   | 10           | 1                       | 33  | 24                 | 45   | 0.07                                     | 0.12 |
| BZG03C47    | 44                  | 47   | 50   | 10           | 1                       | 36  | 24                 | 45   | 0.07                                     | 0.12 |
| BZG03C51    | 48                  | 51   | 54   | 10           | 1                       | 39  | 25                 | 60   | 0.07                                     | 0.12 |
| BZG03C56    | 52                  | 56   | 60   | 10           | 1                       | 43  | 25                 | 60   | 0.07                                     | 0.12 |
| BZG03C62    | 58                  | 62   | 66   | 10           | 1                       | 47  | 25                 | 80   | 0.08                                     | 0.13 |
| BZG03C68    | 64                  | 68   | 72   | 10           | 1                       | 51  | 25                 | 80   | 0.08                                     | 0.13 |
| BZG03C75    | 70                  | 75   | 79   | 10           | 1                       | 56  | 30                 | 100  | 0.08                                     | 0.13 |
| BZG03C82    | 77                  | 82   | 87   | 10           | 1                       | 62  | 30                 | 100  | 0.08                                     | 0.13 |
| BZG03C91    | 85                  | 91   | 96   | 5            | 1                       | 68  | 60                 | 200  | 0.09                                     | 0.13 |
| BZG03C100   | 94                  | 100  | 106  | 5            | 1                       | 75  | 60                 | 200  | 0.09                                     | 0.13 |
| BZG03C110   | 104                 | 110  | 116  | 5            | 1                       | 82  | 80                 | 250  | 0.09                                     | 0.13 |
| BZG03C120   | 114                 | 120  | 127  | 5            | 1                       | 91  | 80                 | 250  | 0.09                                     | 0.13 |
| BZG03C130   | 124                 | 130  | 141  | 5            | 1                       | 100 | 110                | 300  | 0.09                                     | 0.13 |
| BZG03C150   | 138                 | 150  | 156  | 5            | 1                       | 110 | 130                | 300  | 0.09                                     | 0.13 |
| BZG03C160   | 158                 | 160  | 171  | 5            | 1                       | 120 | 150                | 350  | 0.09                                     | 0.13 |
| BZG03C180   | 168                 | 180  | 191  | 5            | 1                       | 130 | 180                | 400  | 0.09                                     | 0.13 |
| BZG03C200   | 188                 | 200  | 212  | 5            | 1                       | 150 | 200                | 500  | 0.09                                     | 0.13 |
| BZG03C220   | 208                 | 220  | 233  | 2            | 1                       | 160 | 350                | 750  | 0.09                                     | 0.13 |
| BZG03C240   | 228                 | 240  | 256  | 2            | 1                       | 180 | 400                | 850  | 0.09                                     | 0.13 |
| BZG03C270   | 251                 | 270  | 289  | 2            | 1                       | 200 | 450                | 1000 | 0.09                                     | 0.13 |

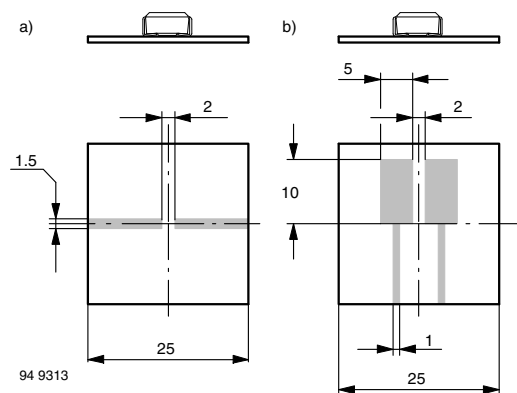
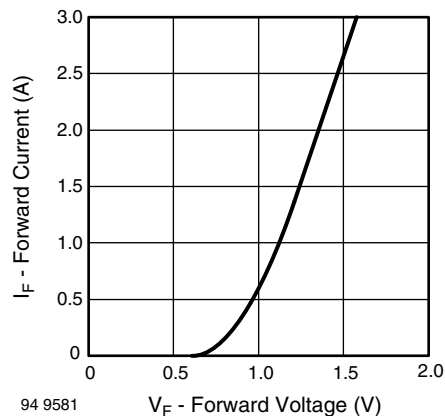
**BASIC CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)

Fig. 1 - Boards for  $R_{thJA}$  Definition (Copper Overlay  $35\text{ }\mu$ )


Fig. 3 - Forward Current vs. Forward Voltage

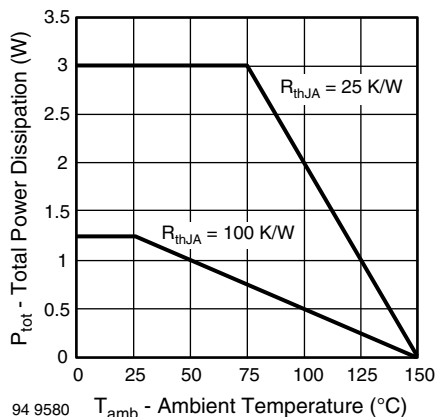


Fig. 2 - Total Power Dissipation vs. Ambient Temperature

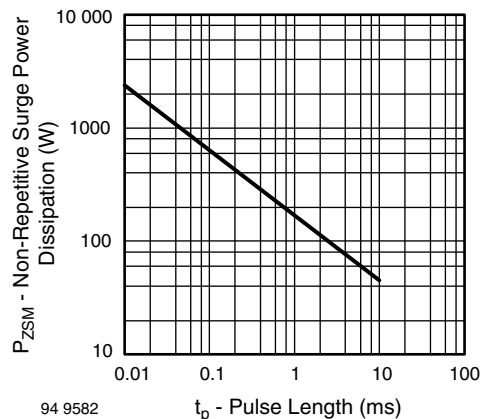


Fig. 4 - Non Repetitive Surge Power Dissipation vs. Pulse Length

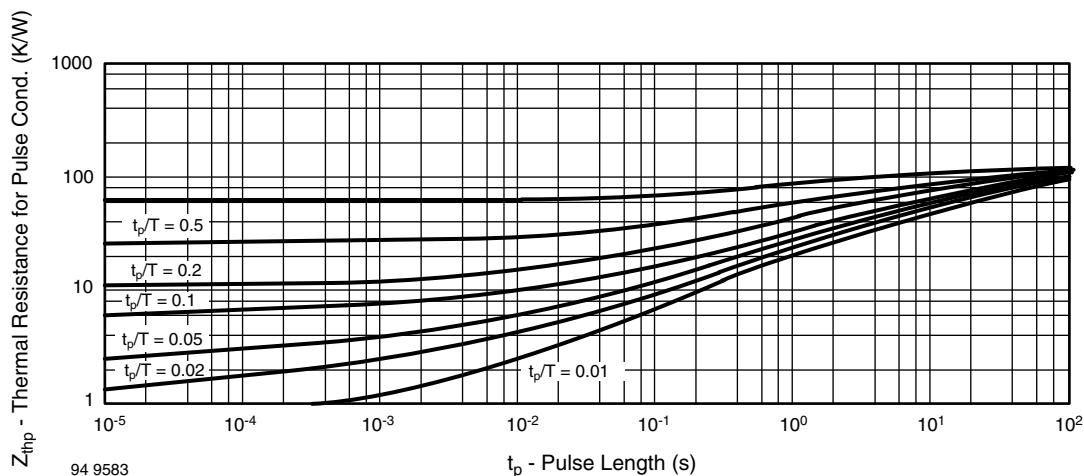
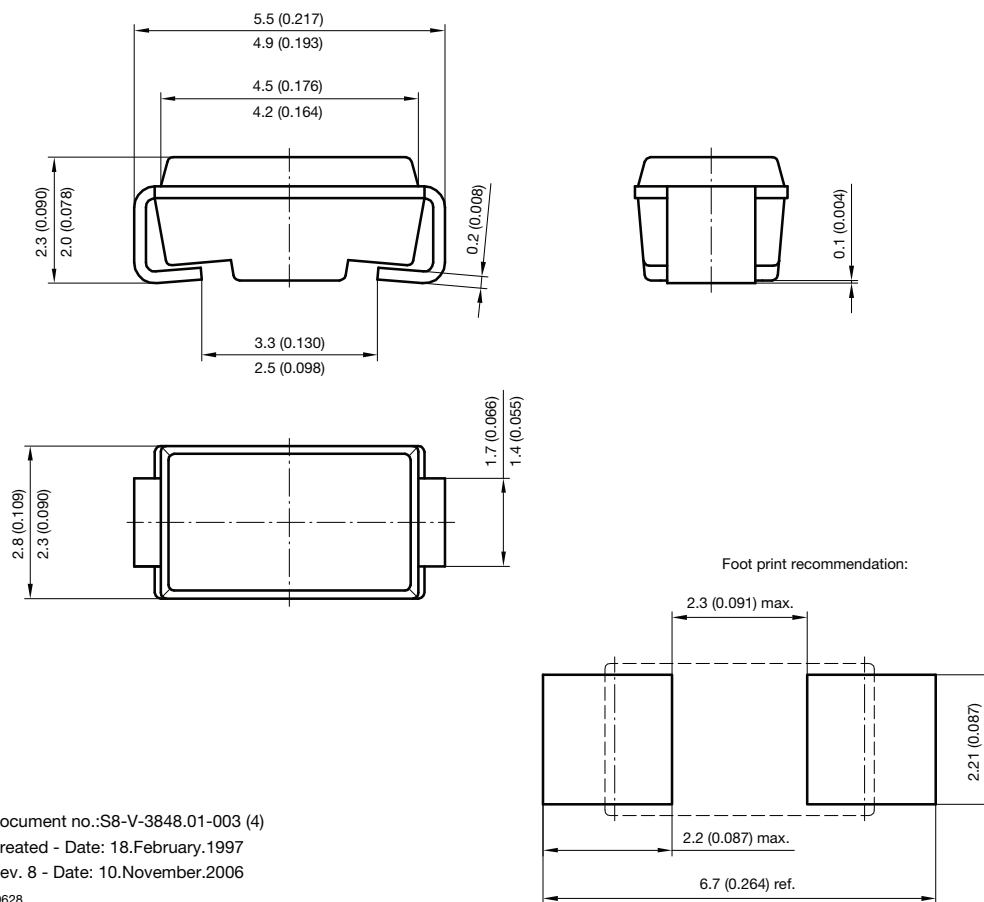


Fig. 5 - Thermal Response



**PACKAGE DIMENSIONS** in millimeters (inches): **DO-214AC**



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